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other ferns come to rest upon the withdrawal of water from their contents is also considered. The swarm period of the spermatozooids of the above-named fern has been determined to be two hours, — a much longer time than reported in previous cases, — during which period the starch stored up in it disappears.

H. M. R.

The Flora of Celebes. — The interest which American botanists are likely to feel in the flora of the Pacific Islands in consequence of our occupation of the Philippines makes Dr. Koorders' report¹ on Minahasa, the northeastern horn of Cêlebes, of more than passing importance to us. In addition to physiographic and similar data this volume, which forms one of the regular series of Mededeelingen issued from the Botanical Garden at Buitenzorg, gives a critical review of what had previously been written on the flora of Celebes, an annotated catalogue of the spermatophytes and pteridophytes known to occur in the island, descriptions of a number of new species, and full indices to the popular and scientific names of the plants, as well as chapters on the economic uses of many of the species and tabulations of plants yielding the more important useful products. Unfortunately the text is in Dutch, but diagnoses of new species are in Latin, and there are frequent annotations in German.

T.

Notes. — The announcement for the Fourteenth Season of the Department of Botany of the Marine Biological Laboratory at Woods Holl has just been issued. The work will commence on July 3 and continue for six weeks. Courses have been provided in Cryptogamic Botany by Dr. Davis and Dr. Moore; in Phanerogamic Botany by Dr. Charles H. Shaw, and in Plant Physiology by Dr. R. H. True. Plant Cytology will be under the direction of Dr. Davis and Mr. Lawson, and in addition to the regular class work provision will also be made for a series of special lectures. Announcements and further information may be obtained from Dr. Bradley M. Davis, University of Chicago.

The *Bulletin de l'Herbier Boissier*, suspended for a time, appears again, under the direction of M. Gustave Beauverd, curator of the herbarium. The first number of the new series, bearing the date December 29, contains papers on African plants by de Wildeman

¹ Koorders, S. H. Verslag eener botanische denstreis door de Minahasa, tevens eerste overzicht der flora van N. O. Celebes, uit een wetenschappelijk en praktisch oogpunt. Batavia, s'Gravenhage, 1898, xxvi + 716 pp., 10 charts and 3 plates. — Mededeelingen van s' Lands Plantentuin, No. xix.

and Durand, ferns of the Amazon region by Christ, Brazilian fungi by the Sydows, the vegetation of Cape Magoary, etc., by Huber, an alpine variety of *Stellaria nemorum* by Beauverd, and a valerian new to the flora of Savoy by Briquet.

Papers of botanical interest in the *Proceedings of the American Pharmaceutical Association* for 1900 are the following: Merrill and Schlotterbeck, alkaloids of *Bocconia cordata*; Gordin, alkaloids of *Ceanothus Americanus*; Kebler, notes on jalap roots; Kraemer, assay of drugs by the use of living plants; Schneider, pharmaceutical bacteriology; Stevens, wild-cherry bark and its preparations; Dohme and Engelhardt, *Atropa Belladonna* or *Scopola Carniolica*; Schlotterbeck, *Adlumia cirrhosa*.

Under the title of *Torrey* the Torrey Botanical Club of New York City has begun the issuance of a monthly journal of botanical notes and news, under the editorial management of Dr. M. A. Howe.

The self-pruning of certain trees, a subject apparently first discussed in this country by Trelease, in the *Report of the Wisconsin Experiment Station* for 1884, and again by Bessey in *Science* for 1900, receives interesting treatment by Schaffner and Tyler in the *Ohio Naturalist* for January. Figures are given illustrating the process in *Populus* and *Salix*.

The *Bulletin of the Torrey Botanical Club* for December contains systematic papers on fungi by Peck, lichens by Zahlbruckner, mosses by Mrs. Britton, fernworts by Maxon, and Rocky Mountain phanerogams by Rydberg.

Part XXIII of *Pittonia* is largely devoted to Compositæ and Cruciferæ, with a decade of new Gentianaceæ, a discussion of some neglected generic types, and a batch of corrections in nomenclature.

Thalictrum confine is the name proposed in *Rhodora* for December, by Mr. Fernald, for a plant of Ontario and Maine, which in habit suggests small-leaved *T. Fendleri*, and he shows that *T. occidentale* extends eastwards so as to reach New Brunswick and Maine.

The systematic value of tendrils in *Lathyrus* is discussed by Fritsch in the *Oesterreichische Botanische Zeitschrift* for November.

Dr. Robinson, in *Rhodora* for December, discusses the nomenclature of *Agrimonia* in New England.

Dr. Holm contributes an article on the anatomy and morphology of *Eriogenia bulbosa* to the *American Journal of Science* for January.

Taraxacum in North America is increased by Professor Greene, in *Pittonia* for January 5, by the description of *T. Chamissonis*, *T. rupestre*, *T. ovinum*, *T. lacerum*, *T. dumetorum*, *T. mutilum*, *T. angustifolium*, and *T. ammophilum*, all from the Northwest, British Columbia, or Alaska.

Senecio, as it occurs in New England, is revised by Greenman in *Rhodora* for January.

Mouarda fistulosa and its allies are passed in critical review by Fernald in *Rhodora* for January.

Professor Kellerman, in *O. S. U. Naturalist*, No. 2, gives an interesting plate of variations in the foliage of *Smilax glauca*.

Professor Scribner and his assistants publish a series of studies on American grasses as *Bulletin 24* of the Division of Agrostology of the United States Department of Agriculture.

The specific or hybrid character of *Asplenium ebenoides* is discussed by Mr. Maxon in the *Botanical Gazette* for December, and, unlike Professor Underwood, he considers the suggestion of hybridity as too patent to be ignored, though he admits the absence of positive proof of it.

A remarkably lobed form of *Asplenium ebeneum* is described by Mr. Davenport in *Rhodora* for January, under the varietal name Hortonæ.

Weinzirl, in the *Journal of the Cincinnati Society of Natural History* for December 28, publishes an account of the air bacteria of the arid region of New Mexico, which leads him to the conclusion that the rather few species found differ from those yet described from other regions.

A compilation of the North American Phyllostictas, with descriptions of the species published up to August, 1900, by J. B. Ellis and B. M. Everhart, has recently been distributed by the authors, and bears the imprint of G. E. Smith, Vineland, N. J.

A paper on a spot disease of the violet, due to *Alternaria Violæ*, by R. H. Dorsett, forms *Bulletin 23* of the Division of Vegetable Physiology and Pathology of the United States Department of Agriculture.

No. 5 of Mr. C. G. Lloyd's *Mycological Notes* is largely concerned with Collybia, as represented about Cincinnati.

Professor Cheney has published "an historical review of the work done on the flora of the territory now included within the limits of Wisconsin," in the *Pharmaceutical Review* for December and January.

The sixth fascicle of de Wildeman and Durand's "Illustrations de la flore du Congo," in course of publication in the *Annales du Musée du Congo*, of Brussels, bears date of September, 1900.

The concluding part of Vol. II, and the first part of Vol. III, of J. Medley Wood's *Natal Plants* have recently appeared.

Dr. Henry Kraemer, in the *Proceedings of the American Pharmaceutical Association* for 1900, proposes the use of living plants in drug assaying, to test the strength of certain toxic solutions. In a series of experiments, seedlings of *Lupinus albus* and *Pisum sativum* were grown in strychnine nitrate, brucine sulphate, and tincture of nuxvomica solutions of different strengths. The growth of the radicles was found to be inversely proportional to the toxicity of the solutions.

In the seventeenth *Annual Report* of the Wisconsin Agricultural Experiment Station, Professor Goff has a paper of interest on the development of flower buds on a number of fruit plants, in connection with the temperature curve for March and April, in which their development was found to lie.

Students of leaf-form and position will be interested in a paper by Raciborski in the *Annales du Jardin Botanique de Buitenzorg*, Vol. II, Part I.

"Open Spaces for the People" is the title of an article by Philip MacMahon, curator of the Brisbane Botanic Gardens, in the *Queensland Agricultural Journal* for December, in which a general plan is given of that garden and of promenades that it is suggested may be connected with it.

Some profit and a little amusement may be obtained from an examination of a recent *Consular Report* on "school gardens in Europe," among which Consul-General Lincoln of Antwerp includes the Kindergartens of that city.

A compendious volume of statistics concerning the use of wood pulp in foreign countries is published as Vol. XIX of the *Special Consular Reports* of our Government.

The "Diamond Jubilee Number" of the *Gardeners' Chronicle* for January 5 contains portraits of Lindley, Paxton, Berkeley, and

Darwin, all of whom contributed matter of botanical or horticultural interest to the earlier volumes of the journal, which, though agricultural in name, has always been of interest and value to the botanist.

The double number of the *Botanische Zeitung* (Abtheilung I) for December 1 is devoted to Brunfels, a botanist of four hundred years ago.

The Fern Bulletin for January opens with a portrait of Professor Underwood.

PALEONTOLOGY.

Dean's "Palæontological Notes."¹ — This elaborate memoir of upwards of forty pages, six plates, and eighteen text-figures, is one of the most important contributions to the literature of Devonian Arthrodires that has yet appeared in this country. It has for its twofold object a minute description of the skeletal structures in *Mylostoma*, *Stenosteus*, and *Selenosteus* (the last two being here made known for the first time), and a discussion of the characters and relationships of the whole group of Arthrodires, with the improvisation of a new system for their arrangement.

Four of the quarto plates are admirably lithographed by the author from original specimens; the other two are from photographs. Not the least valuable and suggestive feature is the interspersion throughout the text of numerous diagrams showing the arrangement of plates in the cranial, dorsal, and ventral armor of different genera of Arthrodires. Restorations of this nature are not only useful for the graphic information they convey, but they afford an extremely convenient means of comparison. The interesting modifications displayed by *Mylostoma* and Dean's two new genera, especially as regards their dentition, constitute a welcome addition to our knowledge of this group. Owing to their poor preservation, the difficulty of deciphering the details which the author has painstakingly worked out and skillfully reconstructed must have been very great, and obviously none but an expert could have succeeded.

¹ Dean, Bashford. Palæontological Notes. I, On Two New Arthrodires from the Cleveland Shale of Ohio; II, On the Characters of *Mylostoma*, Newberry; III, Further Notes on the Relationships of the Arthrognathi. *Mem. N. Y. Acad. Sci.*, vol. ii (1901), pt. iii.